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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/536,871	02/16/2006	Rolf Brisberger	HM-631PCT	4414

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Lucas & Mercanti LLP
475 Park Avenue South
New York, NY 10016

EXAMINER	
TUROCY, DAVID P	
ART UNIT	PAPER NUMBER
1715	

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12/14/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/536,871	BRISBERGER ET AL.	
	Examiner	Art Unit	
	DAVID TUROCY	1715	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 November 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendments, filed 11/24/2010, have been fully considered and reviewed by the examiner. The examiner notes the amendment to claims 1 and 11. Claims 1-11 are pending in the instant application.

Response to Arguments

2. Applicant's arguments with respect to claims 1-11 have been considered but are directed to newly added claim limitations that were not previously presented and therefore the arguments are deemed moot in view of the new ground(s) of rejection.

3. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

As for the requirement that the sensor is arranged above the vertical midpoint of the inductors. While the determination of the vertical position of the sensor would have been obvious to have provide the same results of the sensor arranged at the vertical midpoint, i.e. the location of the strip between the sensors, Kimura discloses "other arrangements of the sensor pair are permissible" (see column 13, lines 31-33) and

discloses at figure 20 measuring using a sensor above the mid point of the inductors and therefore it would have been obvious to have located the sensor pair above the vertical midpoint of the inductors, with a reasonable expectation of predictable and successful results of determining the position of the steel substrate between the inductors. The applicant has failed to provide any evidence relating to the criticality of this parameter, i.e. the unexpected benefits of measuring above the midpoint, or any evidence that one of ordinary skill in the art would not expect predictable results in placing the sensor pair above the midpoint. One of ordinary skill in the art would understand the location of the sensor would bear on the reading of the sensor, i.e. the sensor will measure the location of the metal strip in the guide channel at the sensors position and therefore moving the sensor will predictably provides indication of the position of the metal strip at various locations. The applicant has failed to provide any evidence that would rebut this position, i.e. the reasonable expectation of providing predictable results.

As for the limitation requiring that the sensor is closer to the metal strip then the closest point of the electromagnets, the examiner notes that this limitation, in view of the teachings of Kimura, would have been obvious to one of ordinary skill in the art. Kimura discloses the sensor is preferably coplanar to the electromagnetic edge; however the examiner notes that one of ordinary skill in the art would expect successful results in providing a sensor that is not coplanar (i.e. closer to the strip). Specifically, the sensor measures the distance between the sensor and the metal strip and conveys the data to the controller to determine if the electromagnets should apply a magnetic force to provide the strip with the desired properties (location, vibration, etc.) One of ordinary skill in the

art would expect predictable results in modification of the position of the sensor. Specifically, the sensor measures distance between the sensor and the steel strip, the logic controller will adjust the electromagnets accordingly and therefore the distance between the sensor and the steel strips does not have to equal the distance between the electromagnets and the steel strip. The mere fact that the sensor is placed closer to the steel strip does not provide basis for patentability because one of ordinary skill in the art would expect predictable results in the placement of the sensor at a location closer to the steel strip and thereafter providing the controller with the desired distance measurements that will provide the appropriate information to effectively control the steel strip. In other words, one of ordinary skill in the art would expect that the steel strip will be predictably controlled in the same manner because the simple modification of sensor placement and concurrent adjustment of the controller to provide the information to the controller of the placement of the sensor is well within the skill of one of ordinary skill in the art. By moving the sensor to a place closer to the strip, one of ordinary skill in the art would understand that the sensor measurements will only be displaced by the amount of adjustment, i.e. the distance between the sensor and the steel strip is merely a function of the position of the sensor within the guide channel.

All other arguments are (1) unsupported by any factual evidence and/or (2) not commensurate in scope with the claims and are therefore deemed moot.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2, and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6194022 by Schunk in view of JP 10298727, hereafter JP 727 and US Patent 6471153 by Kimura et al. and further in view of the Admitted state of the art OR Hitz (True Position Measurement with Eddy Current Technology).

Schunk discloses a device for hot dip coating a metal strand (1), especially a steel strip, in which the metal strand (5) is passed vertically through a coating tank (1) that contains the molten coating metal (2) and through a guide channel (4) upstream of the coating tank, with at least two inductors (7,6) installed on both sides of the metal strand (5) in the area of the guide channel (4) for generating an electromagnetic field in order to keep the coating metal (2) in the coating tank (1) and with at least one sensor for determining the position of the metal strand (1) in the area of the guide channel (4). (entire reference, figures).

Schunk discloses determining the position of the steel strip in the guide channel, but fails to disclose the sensor is at the same height as the inductors; however, JP 727 discloses a method for controlling the vibration discloses position detection sensors installed within the height of the electromagnets (see figure, abstract). Therefore, taking the references collectively, it would have been obvious to one of ordinary skill in

the art at the time of the invention to have modified Schunk to include the position sensors which are installed, as viewed in the direction of conveyance of the metal strand within the height of the inductors and between the inductors and the metal strand with a reasonable expectation of success

As for the requirement of the sensor being spaced from the inductors in a direction of the center line completely from the innermost surface of the inductors facing the center line, this is clearly taught by Kimura, which discloses multiple arrangements for sensors for determining placement of the vertical steel strip includes among other things between the inductors and the metal strip and spaced apart from the inductors (see figures 3A-3C, 20-24). Therefore, taking the references for all their teachings, it would have been obvious to one of ordinary skill in the art to have modified Schunk in view of JP 727 to include sensors between the metal strip and the inductor, wherein the sensors are spaced apart from the inductors with a reasonable expectation of providing predictable results of control and measurement of the displacement of the metal strip in the guide channel, Kimura explicitly discloses the sensor is completely away from the inductor as claimed (see figures). The mere fact that the inductor is connected to the sensor does not remedy the fact that the claims fail to exclude such a situation.

As for the limitation requiring that the sensor is closer to the metal strip then the closest point of the electromagnets, the examiner notes that this limitation, in view of the teachings of Kimura, would have been obvious to one of ordinary skill in the art. Kimura discloses the sensor is preferably coplanar to the electromagnetic edge. However the

examiner notes that one of ordinary skill in the art would expect successful results in providing a sensor that is not coplanar (i.e. closer to the strip). Specifically, the sensor measures the distance between the sensor and the metal strip and conveys the data to the controller to determine if the electromagnets should apply a magnetic force to provide the strip with the desired properties (location, vibration, etc.) One of ordinary skill in the art would expect predictable results in modification of the position of the sensor. Specifically, the sensor measures distance between the sensor and the steel strip, the logic controller will adjust the electromagnets accordingly and therefore the distance between the sensor and the steel strips does not have to equal the distance between the electromagnets and the steel strip. The mere fact that the sensor is placed closer to the steel strip does not provide basis for patentability because one of ordinary skill in the art would expect predictable results in the placement of the sensor at a location closer to the steel strip and thereafter providing the controller with the desired distance measurements that will provide the appropriate information to effectively control the steel strip. In other words, one of ordinary skill in the art would expect that the steel strip will be predictably controlled in the same manner because the simple modification of sensor placement and concurrent adjustment of the controller to provide the information to the controller of the placement of the sensor is well within the skill of one of ordinary skill in the art. By moving the sensor to a place closer to the strip, one of ordinary skill in the art would understand that the sensor measurements will only be displaced by the amount of adjustment, i.e. the distance between the sensor and the steel strip is merely a function of the position of the sensor within the guide channel.

As for the requirement that the sensor is a coil. Schunk in view of JP 727 and Kimura fails to disclose the position determination using coils, however, ASA discloses that coils uses to determine the position of the metal strip is known and suitable in the art (see page 5 of original specification) and alternatively, Hitz discloses using a coil to accurately determine the distance from a substrate (figure 1 and reading of entire reference) therefore taking the references collectively, it would have been obvious to have used coils as the position sensor with a reasonable expectation of success.

As for the requirement that the sensor is arranged above the vertical midpoint of the inductors. While the vertical position of the sensor would have been obvious to have provide the same results of the sensor arranged at the vertical midpoint, i.e. the location of the strip between the sensors, Kimura discloses “other arrangements of the sensor pair are permissible" (see column 13, lines 31-33) and discloses at figure 20 measuring using a sensor above the mid point of the inductors and therefore it would have been obvious to have located the sensor pair above the vertical midpoint of the inductors, with a reasonable expectation of predictable and successful results of determining the position of the steel substrate between the inductors. The applicant has failed to provide any evidence relating to the criticality of this parameter, i.e. the unexpected benefits of measuring above the midpoint, or any evidence that one of ordinary skill in the art would not expect predictable results in placing the sensor pair above the midpoint.

Claim 2: JP 727 and Kimura disclose, at figures, the position sensors and the inductors are arranged symmetrically with respect to the center plane of the guide channel.

Claims 7-9: JP 727 discloses including a measuring device and a subtractor in the system (see 6, 7 in figures and 0024-0026). Additionally, the examiner notes the claims are directed to the device and the remaining claims are directed to intended use of the structure and It is well settled that the intended use of a claimed apparatus is not germane to the issue of the patentability of the claimed structure. If the prior art structure is capable of performing the claimed use then it meets the claim. *In re Casey*, 152 USPQ 235, 238 (CCPA 1967); *In re Otto*, 136 USPQ 459 (CCPA 1963).

Claim 10: It would have been obvious to use several pairs of coils, as viewed in the direction of conveyance of the metal strand, within the height of the inductors and between the inductors and the metal strand to increase the accuracy of the position measurement.

Claim 11: Schunck in view of JP 727 and Kimura discloses all that is taught above; additionally JP 727 computing the deviation is measured from the desired value to result in an indicator of the position of the metal strand (0025-0026).

6. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schunck, in view of JP 727 and Kimura and further in view of US Patent 4912407, hereafter US 407.

Schunck in view of JP 727 and Kimura discloses all that is taught above, including inductive sensors for determining the position, however, the references fail to disclose the coils as wire winding, one or more windings, copper coils, or the shape of the coils. However, US 407 discloses a known and suitable method for forming coils for

determining position with respect to metal, discloses a displacement sensor includes a copper coil, without a core, with more then 1 circular winding (column 8), therefore taking the references collectively, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Schunck in view of 727 and Kimura to use the sensors as taught by US 407 with a reasonable expectation of success because such sensors are taught as known and suitable inductive sensors for molten metal and position detection.

7. Claims 1, 2, and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schunck in view of JP 10298727, hereafter JP 727 and JP 10-110251, hereafter Kimura in view of ASA or Hitz and further in view of JP 06108220 by Kazunari, hereafter JP 220.

Schunck, JP 727 and Kimura in view of ASA or Hitz discloses all that is taught above and while the examiner maintains the position of obviousness regarding the placement of the sensor, the examiner cites here JP 220, which explicitly discloses the sensor is closer to the steel strip then the electromagnet (see figure 1) and therefore modification of the prior art to provide a sensor that is closer to the steel strip then the closest point of the electromagnet would have been obvious to one of ordinary skill in the art because such a modification would have led to predictable results of successful control.

8. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schunck, JP 727, Kimura in view of ASA or Hitz and JP 220 as applied above and further in view of US Patent 4912407, hereafter US 407.

Schunck in view of JP 727, Kimura, and JP 220 in view of ASA or Hitz discloses all that is taught above, including inductive sensors for determining the position, however, the references fail to disclose the coils as wire winding, one or more windings, copper coils, or the shape of the coils. However, US 407 discloses a known and suitable method for forming coils for determining position with respect to metal, discloses a displacement sensor includes a copper coil, without a core, with more then 1 circular winding (column 8), therefore taking the references collectively, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Schunck in view of JP 727, Kimura, and JP 220 in view of ASA or Hitz to use the sensors as taught by US 407 with a reasonable expectation of success because such sensors are taught as known and suitable inductive sensors for molten metal and position detection.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Us Patent 6194022 discloses attaching the sensors to computer, capable of acting as a measuring and subtractor as required by the claims (see column 3, lines 5-10).WO 01/71051 discloses multiple pairs of coils between the inductor and the metal strip.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID TUROCY whose telephone number is (571)272-2940. The examiner can normally be reached on Monday, Wednesday, Friday, 7 a.m.-6 p.m., Tuesdays 7 a.m.-3:30 p.m. and Thursday 7-10 a.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David Turocy/
Primary Examiner, Art Unit 1792